

## SEQUENCE LISTING

<110> Ehrhardt, Thomas  
 Lerchl, Jens  
 Nigel, Marc Stitt  
 Zenner, Rita

<120> Plant dihydroorotase

<130> 0050/50716

<140> US 10/070,277

<141> Filing date not yet granted

<150> PCT/EP00/08581

<151> 2000-09-02

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cac ttt ggg agg gca ata gtc atg cca aat ttg aag cct cct atc act	146
His Phe Gly Arg Ala Ile Val Met Pro Asn Leu Lys Pro Pro Ile Thr	
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acc act gct gct gct gta gca tac cgg gag gcg ata ttg aaa tct tta	194
Thr Thr Ala Ala Ala Val Ala Tyr Arg Glu Ala Ile Leu Lys Ser Leu	
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cct gtt gat agt gat ttc aac cct ctt atg aca ctt tat ttg aca gat	242
Pro Val Asp Ser Asp Phe Asn Pro Leu Met Thr Leu Tyr Leu Thr Asp	
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aca acc agt cct atg gaa atc aaa cta gca aga gag agc cag gtc gta	290
Thr Thr Ser Pro Met Glu Ile Lys Leu Ala Arg Glu Ser Gln Val Val	
80 85 90	
ttt ggg gtg aag ttg tac cct gct ggt gcc acg aca aat tct caa gat	338
Phe Gly Val Lys Leu Tyr Pro Ala Gly Ala Thr Thr Asn Ser Gln Asp	

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Gly Val Thr Asp Leu Phe Gly Lys Cys Leu Pro Val Leu Gln Glu Met	115	120	125	
gtt gag cat aat atg cct ctg ctg gtt cat gga gag gtt act aat cct				434
Val Glu His Asn Met Pro Leu Leu Val His Gly Glu Val Thr Asn Pro	130	135	140	
gag gtt gac atg ttt gat aga gaa aag gta ttc att gaa acg gtt cta				482
Glu Val Asp Met Phe Asp Arg Glu Lys Val Phe Ile Glu Thr Val Leu	145	150	155	
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Arg Pro Leu Val Gln Lys Phe Pro Gln Leu Lys Val Val Met Glu His	160	165	170	
gtt acc acc att gat gct gtt aag ttt gtt gaa tct tgc act gaa gga				578
Val Thr Thr Ile Asp Ala Val Lys Phe Val Glu Ser Cys Thr Glu Gly	175	180	185	190
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Phe Val Ala Ala Thr Val Thr Pro Gln His Leu Val Leu Asn Arg Asn	195	200	205	
tct ctc ttc caa ggg ggc tta caa ccg cat aat tac tgc ctt cca gtc				674
Ser Leu Phe Gln Gly Gly Leu Gln Pro His Asn Tyr Cys Leu Pro Val	210	215	220	
ctc aaa aga gag atc cac agg gag gca ctt gtg tca gct gta aca agt				722
Leu Lys Arg Glu Ile His Arg Glu Ala Leu Val Ser Ala Val Thr Ser	225	230	235	
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Gly Ser Lys Arg Phe Phe Leu Gly Thr Asp Ser Ala Pro His Asp Arg	240	245	250	
cga aga aaa gag tgt tct tgt gga tgt gct ggt att tac aat gca cct				818
Arg Arg Lys Glu Cys Ser Cys Gly Cys Ala Gly Ile Tyr Asn Ala Pro	255	260	265	270
gta gcc ttg tca gta tat gcg aag gtg ttt gaa aag gaa aat gca ctc				866
Val Ala Leu Ser Val Tyr Ala Lys Val Phe Glu Lys Glu Asn Ala Leu	275	280	285	
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Asp Lys Leu Glu Ala Phe Thr Ser Phe Asn Gly Pro Asp Phe Tyr Gly	290	295	300	
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Val Pro Glu Ser Phe Ser Tyr Ala Ser Gly Asp Ile Ile Pro Met Phe	320	325	330	
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Ala Gly Glu Met Leu Asp Trp Leu Pro Ala Pro Leu  
 335 340 345

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 <213> Solanum tuberosum

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 Ala Ala Ala Val Ala Tyr Arg Glu Ala Ile Leu Lys Ser Leu Pro Val  
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 Asp Ser Asp Phe Asn Pro Leu Met Thr Leu Tyr Leu Thr Asp Thr Thr  
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 Ser Pro Met Glu Ile Lys Leu Ala Arg Glu Ser Gln Val Val Phe Gly  
 85 90 95  
 Val Lys Leu Tyr Pro Ala Gly Ala Thr Thr Asn Ser Gln Asp Gly Val  
 100 105 110  
 Thr Asp Leu Phe Gly Lys Cys Leu Pro Val Leu Gln Glu Met Val Glu  
 115 120 125  
 His Asn Met Pro Leu Leu Val His Gly Glu Val Thr Asn Pro Glu Val  
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 Asp Met Phe Asp Arg Glu Lys Val Phe Ile Glu Thr Val Leu Arg Pro  
 145 150 155 160  
 Leu Val Gln Lys Phe Pro Gln Leu Lys Val Val Met Glu His Val Thr  
 165 170 175  
 Thr Ile Asp Ala Val Lys Phe Val Glu Ser Cys Thr Glu Gly Phe Val  
 180 185 190  
 Ala Ala Thr Val Thr Pro Gln His Leu Val Leu Asn Arg Asn Ser Leu  
 195 200 205

Phe Gln Gly Gly Leu Gln Pro His Asn Tyr Cys Leu Pro Val Leu Lys  
 210 215 220  
 Arg Glu Ile His Arg Glu Ala Leu Val Ser Ala Val Thr Ser Gly Ser  
 225 230 235 240  
 Lys Arg Phe Phe Leu Gly Thr Asp Ser Ala Pro His Asp Arg Arg Arg  
 245 250 255  
 Lys Glu Cys Ser Cys Gly Cys Ala Gly Ile Tyr Asn Ala Pro Val Ala  
 260 265 270  
 Leu Ser Val Tyr Ala Lys Val Phe Glu Lys Glu Asn Ala Leu Asp Lys  
 275 280 285  
 Leu Glu Ala Phe Thr Ser Phe Asn Gly Pro Asp Phe Tyr Gly Leu Pro  
 290 295 300  
 Arg Asn Asn Ser Lys Ile Lys Leu Ser Lys Thr Pro Trp Lys Val Pro  
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 atcttagcat caacaacagt tgctgtctct cttttgttcg tccaatatac tgagcatttt 240  
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 gaaa atg aga caa agg gtt gga ttt gca ttg att aga gaa agc ttg tat 349  
 Met Arg Gln Arg Val Gly Phe Ala Leu Ile Arg Glu Ser Leu Tyr  
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 cgt aag cta aaa cca agc tct gtt ccc aga cat tat tgc act tct tct 397  
 Arg Lys Leu Lys Pro Ser Ser Val Pro Arg His Tyr Cys Thr Ser Ser  
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 tca gct aat gtt cct cct att cct cca cct aag att cct cat tct tct 445  
 Ser Ala Asn Val Pro Pro Ile Pro Pro Pro Lys Ile Pro His Ser Ser  
 35 40 45

aaa aag gga agg ttg ttt aca gga gcc act att ggt cta cta ata gct	493
Lys Lys Gly Arg Leu Phe Thr Gly Ala Thr Ile Gly Leu Leu Ile Ala	
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Gly Gly Ala Tyr Ala Ser Thr Val Asp Glu Ala Thr Phe Cys Gly Trp	
65 70 75	
cta ttc tca gca aca aaa cta gta aat ccg ttc ttt gca ttt ctg gat	589
Leu Phe Ser Ala Thr Lys Leu Val Asn Pro Phe Phe Ala Phe Leu Asp	
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cca gag gtt gct cac aaa ctg gcg gtc tct gct gca gcc cga gga tgg	637
Pro Glu Val Ala His Lys Leu Ala Val Ser Ala Ala Arg Gly Trp	
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gtt cca agg gag aag agg cca gat cct cct ata ttg ggc ctt gat gtg	685
Val Pro Arg Glu Lys Arg Pro Asp Pro Pro Ile Leu Gly Leu Asp Val	
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Trp Gly Arg Arg Phe Ser Asn Pro Val Gly Leu Ala Ala Gly Phe Asp	
130 135 140	
aag aat gct gag gct gtt gaa gga ttg ctt gga tta ggt ttt ggc ttt	781
Lys Asn Ala Glu Ala Val Glu Gly Leu Leu Gly Leu Gly Phe Gly Phe	
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Val Glu Val Gly Ser Val Thr Pro Ile Pro Gln Glu Gly Asn Pro Lys	
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cca cgt ata ttt agg ttg cca aat gaa ggt gct ata ata aat agg tgt	877
Pro Arg Ile Phe Arg Leu Pro Asn Glu Gly Ala Ile Ile Asn Arg Cys	
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ggc ttc aat agt gaa gga atc gtt gtg gtt gcc aaa cga ttg ggt gct	925
Gly Phe Asn Ser Glu Gly Ile Val Val Val Ala Lys Arg Leu Gly Ala	
195 200 205	
cag cat ggt aag aga aag ttg gaa aca tct agt act tca tct cca gct	973
Gln His Gly Lys Arg Lys Leu Glu Thr Ser Ser Thr Ser Ser Pro Ala	
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Gly Asp Glu Val Lys His Gly Gly Lys Ala Gly Pro Gly Ile Leu Gly	
225 230 235	
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Val Asn Leu Gly Lys Asn Lys Thr Ser Glu Asp Ala Ala Ala Asp Tyr	
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gtg caa gga gtc cat aca tta tct cag tat gct gac tac ttg gta att	1117
Val Gln Gly Val His Thr Leu Ser Gln Tyr Ala Asp Tyr Leu Val Ile	
260 265 270	
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atg cag tgg ggt gag gaa gga cct ccg cct tta ctt gtg aaa att gct 1261
Met Gln Trp Gly Glu Glu Gly Pro Pro Pro Leu Leu Val Lys Ile Ala
      305      310      315

cca gat ttg tct aaa caa gat ctt gaa gat att gca gtg gtg gct gtt 1309
Pro Asp Leu Ser Lys Gln Asp Leu Glu Asp Ile Ala Val Val Ala Val
      320      325      330

gct ctt cgt gtg gat gga ctg att ata tca aat act act gtc caa aga 1357
Ala Leu Arg Val Asp Gly Leu Ile Ile Ser Asn Thr Thr Val Gln Arg
      340      345      350

cca gat tcc ata agt caa aac cct gtg gct caa gag gct ggt ggc ttg 1405
Pro Asp Ser Ile Ser Gln Asn Pro Val Ala Gln Glu Ala Gly Gly Leu
      355      360      365

agt ggg aag cca ctc ttt gac atg tca aca aat ata ctg aag gag atg 1453
Ser Gly Lys Pro Leu Phe Asp Met Ser Thr Asn Ile Leu Lys Glu Met
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tac gtt ctg act aag gga agg att cct ctg att ggc act ggg ggt att 1501
Tyr Val Leu Thr Lys Gly Arg Ile Pro Leu Ile Gly Thr Gly Gly Ile
      385      390      395

agc agt ggc gag gat gct tac aag aaa att cga gct ggt gcc act ctt 1549
Ser Ser Gly Glu Asp Ala Tyr Lys Lys Ile Arg Ala Gly Ala Thr Leu
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gtt cag ctt tat aca gca ttt gca tat gga ggc cct gca ctt atc ccc 1597
Val Gln Leu Tyr Thr Ala Phe Ala Tyr Gly Gly Pro Ala Leu Ile Pro
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gat ata aag gat gaa ctt gct cgt tgc tta gaa aag gat ggt tat aag 1645
Asp Ile Lys Asp Glu Leu Ala Arg Cys Leu Glu Lys Asp Gly Tyr Lys
      435      440      445

tca atc agt gag gct gtt gga gca gac tgc aga tagtagtagt tgatatacta 1698
Ser Ile Ser Glu Ala Val Gly Ala Asp Cys Arg
      450      455

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 Phe Ser Ala Thr Lys Leu Val Asn Pro Phe Phe Ala Phe Leu Asp Pro  
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 Glu Val Ala His Lys Leu Ala Val Ser Ala Ala Ala Arg Gly Trp Val  
 100 105 110  
 Pro Arg Glu Lys Arg Pro Asp Pro Pro Ile Leu Gly Leu Asp Val Trp  
 115 120 125  
 Gly Arg Arg Phe Ser Asn Pro Val Gly Leu Ala Ala Gly Phe Asp Lys  
 130 135 140  
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 Glu Val Gly Ser Val Thr Pro Ile Pro Gln Glu Gly Asn Pro Lys Pro  
 165 170 175  
 Arg Ile Phe Arg Leu Pro Asn Glu Gly Ala Ile Ile Asn Arg Cys Gly  
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 245 250 255  
 Gln Gly Val His Thr Leu Ser Gln Tyr Ala Asp Tyr Leu Val Ile Asn  
 260 265 270  
 Ile Ser Ser Pro Asn Thr Pro Gly Leu Arg Gln Leu Gln Gly Arg Lys  
 275 280 285  
 Gln Leu Lys Asp Leu Val Lys Lys Val Gln Ala Ala Arg Asp Glu Met

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				325					330						335
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Asp	Ser	Ile	Ser	Gln	Asn	Pro	Val	Ala	Gln	Glu	Ala	Gly	Gly	Leu	Ser
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Gly	Lys	Pro	Leu	Phe	Asp	Met	Ser	Thr	Asn	Ile	Leu	Lys	Glu	Met	Tyr
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Ser	Gly	Glu	Asp	Ala	Tyr	Lys	Lys	Ile	Arg	Ala	Gly	Ala	Thr	Leu	Val
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Gln	Leu	Tyr	Thr	Ala	Phe	Ala	Tyr	Gly	Gly	Pro	Ala	Leu	Ile	Pro	Asp
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Ile	Lys	Asp	Glu	Leu	Ala	Arg	Cys	Leu	Glu	Lys	Asp	Gly	Tyr	Lys	Ser
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